Product information

Compact and smart dosing system · µDispense

Description

The micro-dispense module µDispense® is a compact system for process-safe liquid handling in analytical devices. It doses and meters liquids in the microliter and milliliter range very precisely. The size is based on the format of common syringe pumps.

The micro-dispense module is characterized by a modular design with optional actuator modules, such as switchable in- and outlet, various pump sizes, filters and flow sensors for volume flow control. The core component is a micro annular gear pump, which ensures precision, accuracy, low pulsation and high durability. It reduces maintenance expenses due to its long service life.

Due to the interface compatibility, existing syringe pumps can be replaced by µDispense. With the Cavro® script language protocol and an extended command set, µDispense behaves similar to a programmable syringe pump.

In addition to dispensing smallest volumes of liquid, the quiet and rotary operating micro pump enables continuous and reversible volume flow. The system is rinsed with high flow rates. Herewith, you will find the right dispensing pump for small dispensing volumes and microfluidic applications.

Advantages

- continuous and reversible flow rate
- high flow rates during rinsing
- modular design
- low noise level
- long service life
- low pulsation

Applications

- Contactless sample introduction for mass spectrometry
- Analytical instrumentation
- Biotechnology
- Laboratory automation
- Blood typing
- Ion channel screening
- Flow cytometry
- Cell sorting
- DNA isolation
- Chromatography
- IVD (In-vitro diagnostics)

Technical data

Pumps	mzr-2521, mzr-2921, mzr-4622
Flow rate range (without control)	up to 72 ml/min *
Controlled flow rate range	10 - 1,000 µl/min (H2O) / 50 - 2,500 (Methanol) * Additional media on request.
Dosing volume	beginning from 1 µl
Precision CV	< 1 % (Coefficient of variation CV)
Differential pressure range	up to 3 bar (43.5 psi) *
Storage temperature range	-20 … +65 °C (+104 ... +149 °F)
Liquid temperature range	-5 ... +60 °C (+23 ... +140 °F) @ 20 ... 95 % humidity
Viscosity range	up to 20 * mPas
Liquids	aqueous solutions, solvents
Materials of pump	stainless steel 316L, ceramics, tungsten carbide Ni based, epoxy resin; shaft seal: graphite-reinforced PTFE, stainless steel 316L; static seals: FFPM, optional: FPM, EPDM
Additional materials	manifold: PEEK™; valve: PEEK™, FFPM optional: PPS, FPM, EPDM; volume flow sensor: borosilicate glass; filter: stainless steel
Seal materials	static seal: FFPM, optional: EPDM, FPM
Electronics	ARM Cortex M3 microprocessor
Motor	brushless DC-motor (BLDC); nominal voltage 24 V; torque 3.3 mNm; analog hall sensors
Electrical connection	D-sub plug, 15-pole (male connector)
Power supply	24 V DC ±10 %, max. 1.5 A
Interface	RS-232 and RS-485 with 9600 or 38400 Baud; CAN with 100 and 125 kBaud
Protocol	standard commands of syringe pumps OEM Communication (OC) protocol and Data Terminal (DT) protocol
Addressing	max. 15 devices with RS-485 Bus ("daisy-chaining"); max. 15 devices with CAN-Bus
Inputs and outputs	2 additional digital inputs with TTL Level; 3 additional outputs with TTL level
Fluid connection	1/4"-28 UNF
Accessories	additional fluidic inlets and outlets, filter, gear box, volume flow sensor
Dimensions (L x W x H)	106.7 x 44.4 x 127.0 mm (4.2" x 1.75" x 5.0")
Weight	approx. 800 g
Remarks	* depending on the size of the micro annular gear pump.

Notice
Even if single parameters are within the indicated performance range of technical data, certain parameter combinations may not be achievable. Single parameters may exceed their indicated performance range under adequate circumstances. For detailed evaluation please contact HNP Mikrosysteme. Actual performance may vary. Specifications are subject to change without notice. This document is subject to change without notice.

Accessories

- mzr-2521
- mzr-4622
- mzr-2921

Typical liquids

- Organic and inorganic solvents
- Nutrient media
- Water solutions
- Buffer solutions

Dispense Module in syringe pump format

- size of half-height syringe pumps format
- communication via syringe pump programming commands and expanded command set
- compatible integration in analytical devices
- modular design (fluid in- and outlet, sensors, filter, materials)
- low noise level

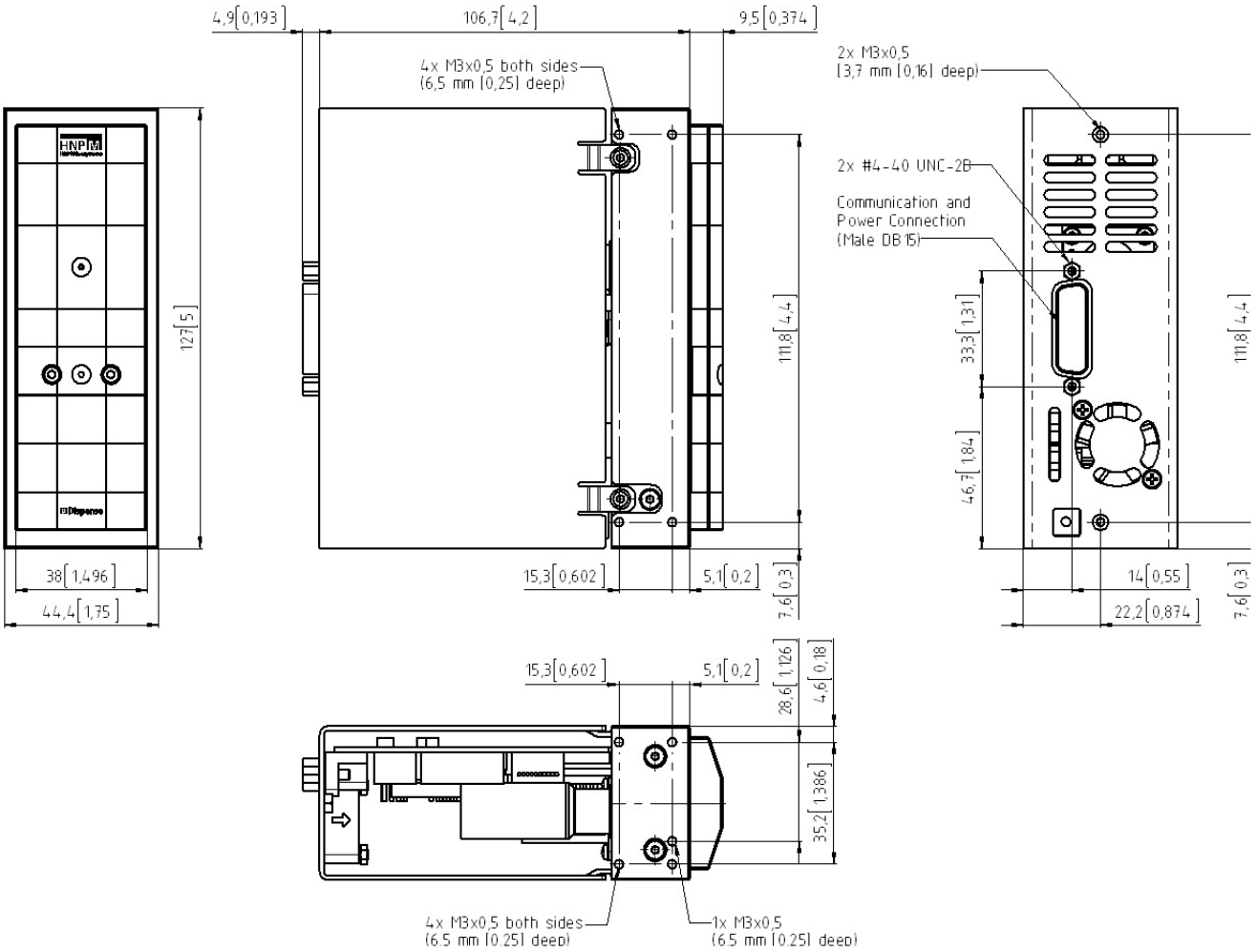
Micro annular gear pump

- high precision of dispense volume and volume flow
- discrete dosing of smallest liquid volumes
- continuous, uninterrupted volume flow with low pulsation
- wide dynamic range of pump with low dosing volumes and high volume flow for rinsing without replacement of components
- long service life and low life cycle costs
- low cycle times

Sensor control and monitoring (optional)

- precise controlled volume flow
- process monitoring and documentation

Dimensions



Patents and trademarks

Our products are protected by the following national and international patents: DE 10 2018 129 631.2 B3; EP 3 884 162; CN 113 302 399 B; DE 10 2018 129 633.9 B3; EP 3 884 160; CN 113 272 553 B; DE 10 2018 129 634.7 B3; EP 3 884 527; DE 10 2018 129 635.5 B3; EP 3 762 165; DE 10146 793.1; EP 1 354 135 B1; US 7,698,818 B2; DE 10 2011 051 486 B4; EP 2 726 740 B1; US 9,404,492 B2; CN 103 732 921B; EP 2 640 977 B1; US 10,012,220 B2; CN 103 348 141 B; HK 1 185 648 B.

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